News Briefs

Correction to softball tournament date

The Gilruth Center will host a men's open preseason softball tournament Saturday, Aug. 2, not Aug. 19 as stated in the article on page 6. For details call the Gilruth at x33345.

Data recorders on display next week

Gould Instrument Systems will display products and solutions for data acquisition and recording challenges from 10:30 a.m.-4 p.m. Monday, Aug. 4 and Tuesday, Aug. 5 in the Bldg. 111 conference center. For more information call Beverly Anderson at x34511.

NASA technology may help assess bones

A portable device developed for the space program to examine how physical activity relates to bone density may someday serve as a way to assess a person's risk of osteoporosis. The device, developed by researchers in the Life Sciences Division at NASA's Ames Research Center, provides a record of the major forces people apply to their bodies throughout the day. It does this by measuring and recording the interaction between the foot and the ground during daily activity. This "loading" of the body plays an important role in maintaining muscle and bone strength in the lower limbs.

Pathfinder software wins NASA award

NASA's Inventions and Contributions Board, has selected a software program used on the Mars Pathfinder mission as the winner of the 1997 NASA Software of the Year Award. Abhinandan Jain, Guillermo Rodriguez, and Guy Man of NASA's Jet Propulsion Laboratory developed the software called DARTS: Dynamics Algorithms for Real-Time Simulation. The DARTS software can be used to generate real-time simulations to test and verify flight software and hardware for a variety of spacecraft missions.

Mars Pathfinder mission commemorated at Smithsonian

A sweeping 360-degree color panorama of the Martian landing site, taken by the camera on the Mars Pathfinder's Carl Sagan Memorial Station, will go on display at the National Air and Space Museum's Milestones of Flight Hall. The image shows features ranging from rocks near the lander to more distant objects, such as hills on the horizon.

JSC quality system review prompts changes

A review of JSC's Quality System has prompted some changes that will effect employees and their managers.

A pre-assessment of the system was performed by National Quality Assurance during the week of July 7. National Quality Assurance reviewed documentation and interviewed numerous JSC and contractor employees to determine to what extent the JSC Quality System is in compliance with the ISO 9001 standard. Several major problems with the quality system were identified during the pre-assessment.

JSC Director George Abbey has therefore directed the following changes to ensure that JSC will successfully pass the final certification audit in November.

- Individual Performance Plans will now include elements addressing successful quality system implementation.
- There will be a weekly status to senior staff to cover the closure of non-conformances identified during the pre-assessment.
- There will be weekly quality system implementation status meetings, attended by the deputy directors and a senior manager from each division level organization. The meeting will be chaired by the ISO 9000 Office.
- The internal audit function will be consolidated and enhanced within the ISO 9000 Office.

For more information about certification of the JSC Quality System, call Leon Blum at x33681.

JSC Photo 97-09095 by Steve Candler

SCIENCE SCOOP—Doug Ming, left, of the Advanced Life Support Office explains the workings of the air-tight chamber in Bldg. 7 and the Lunar Mars Life Support Test Project to members of the National Research Council Space Studies Board. Members of the council were at JSC recently participating in a week of meetings to better understand NASA, its laboratories and space research programs. The board received briefings on key science programs. The National Research Council was organized by the National Academy of Sciences in 1916 to associate the broad community of science and technology with the Academy's purpose of furthering knowledge and advising the government. Functioning in accordance with general policies determined by the Academy, the Council has become the principal operating agency of both the National Academy of Sciences and the National Academy of Engineering in providing services to the government, public, and the scientific and engineering communities. Members are drawn from the National Academy of Sciences, the National Academy of Engineering and the Institute of Medicine. The 25 member board is responsible for providing reports on current technology. Members are selected from a variety of sources including former Congressional members, academia, experts from the private sector and the military.

Foale plants new seeds as operations return to normal

(Continued from Page 1)

Operations aboard Mir have returned to normal since the inadvertent disconnection of a rate sensor cable to Mir's attitude control computer on July 16 which caused the station to lose its orientation to the sun and available electrical power. Following recovery procedures, automatic attitude control of the station is again being provided by the gyrodyne system and all of the available Mir batteries are fully recharged.

Foale's current science activities have included planting a new crop of the Brassica Rapa seeds that are being grown in a continuing study of the effects of microgravity on a plant's life cycle.

Foale is now more than 10 weeks into his flight. He is scheduled to be replaced by astronaut Wendy Lawrence in September following the docking of the shuttle *Atlantis*.

STS-94 crew to discuss science during briefing

(Continued from Page 1)

duration flight," Voss said. "I was a little nervous going into it because I had never flown that long before and yet it was a piece of cake. We had a great mission. The ground team put it all together for us and made sure all of it ran smoothly. Without all the help from the people on the ground we would not have done nearly as well as we did."

STS-94 completed more than 30 science investigations interrupted in April by *Columbia*'s early return on STS-83. That flight was shortened due to a possible problem with one of *Columbia*'s electricity-producing fuel cells.

"To have the opportunity to refly a mission is a once-in-a-career opportunity," Hasell said. "To all the people in training and all the people on the flight control team who are a big part of this eventual success for NASA we want to express our sincere thanks."

Linteris said the chance to fly twice was a bonus he was not expecting and thoroughly enjoyed since most payload specialists usually have only one opportunity to fly in space.

"We were ready to go the first time because of the fantastic training you gave us," Linteris said. "We were even more ready to go the second time. We had 16 days, four times as much time on this mission but it was a heck of a lot more than four times as much fun."

Gernhardt reflected that this mission was harbinger to future missions, with numerous events taking place at the same time.

"It was a great mission and an interesting time to be in space with all the things going on with Mir and the Pathfinder," Gernhardt said. "It was kind of a glimpse into the future and what spaceflight will be like right around the corner with space station. It really makes you appreciate just how special what we are doing is and the large majority of it is due to all the great folks at NASA here on the ground."

While the crew returned to normal duties at JSC, scientists around the world continue to tally the mission's research accomplishments—often surpassing expectations.

"We've done better than anybody expected," said Mission Scientist Michael Robinson, looking back at the wealth of science information collected during the course of this 16-day mission. "A highlight of the mission is that everything worked so well. All orbiter, Spacelab and payload systems performed superbly."

This mission provided new knowledge in the principal scientific fields of materials processing, combustion and biotechnology.

More than 200 fire tests were conducted during the 16-day flight, surpassing the 144 experiments that were planned.

From one of the experiments, said Lead Investigator and Alternate Payload Specialist Paul Ronney of the University of Southern California in Los Angeles, "we can learn the burning limits of fuel mixtures. It gives us an idea of just how lean a fuel can be—and still burn. It may lead to better gas mileage and less auto emissions."

Studies conducted in the Middeck Glovebox have demonstrated its value in supporting a variety of experiments. Experiments in the areas of liquid and bubble behavior, solid-liquid mixtures and fluids-based heat transfer devices tested the glovebox's usefulness. The crew performed more than 100 test runs, doubling what had been scheduled.

Robinson said real progress was made in learning how to control and position liquid drops. Experiments demonstrated that the control of the rotation and quiescent positioning of a liquid drop can be achieved using acoustic levitation in microgravity. The investigation provided information on the dependence of acoustic pressure and torque in a liquid. This study is allowing researchers to assess potential mixing methods, which could lead to improvements in petroleum technology, chemical manufacturing and the cosmetics and food industries.

Other samples were processed in the Large Isothermal Furnace during the mission and focused on the diffusion of impurities in melted germanium—an element used as a semiconductor and alloying agent. Findings may have applications for improving electronic components.

Scientists found that liquids change to solids faster in space than on Earth when the crew conducted experiments in the Physics of Hard Sphere experiment. This knowledge could improve the design and processes of metallic alloys.

Early results of the plant growth experiments on STS-94 show that plants grown in microgravity require less metabolic energy to produce lignin, permitting greater production of secondary metabolites—a source of many medicinal drugs.

A gauge to the amount of science research conducted aboard *Columbia* during STS-94 is the record number of commands sent from Marshall to experiments. The more than 35,000 commands sent broke the previous record of 25,837 set in 1994.

The STS-94 crew members will reflect on the success of their mission and receive their space flight medals during a crew briefing for employees and the public at 1:30 p.m. Aug. 12 in Teague Auditorium.

Crew to check out station arm

(Continued from Page 1)

the study of Earth's atmosphere and future flight demonstrations to support the International Space Station the next, the diversity of the space shuttle system is once again ready to be demonstrated with STS-85," JSC Director George Abbey said following last week's Flight Readiness Review from KSC.

During the CRISTA-SPAS mission, Brown, Pilot Kent Rominger, Mission Specialists Davis, Robert Curbeam and Steve Robinson and Canadian Payload Specialist Bjarni Tryggvason will conduct investigations into fluid and heat transport in space, cell growth, protein crystal growth and combustion.

In addition, the crew will devote a significant portion of the flight to the on-orbit evaluation and demonstration of a small robotic arm that will be located outside the Japanese Experiment Module of the International Space Station. The unique arm will be used to move experiments around the exposed platform of the module.

The Manipulator Flight Demonstration is a self-contained attached payload that will demonstrate the operational capability of the Japanese Experiment Module Remote Manipulator System.

While the Manipulator Flight Demonstration focuses on future systems that will be located at the station, the crew also will continue the series of studies called Risk Mitigation Experiments that utilize shuttle flights to test systems and procedures that will be used on the station. This allows engineers and designers the opportunity to test hardware in the space environment.

Space News ROUNDUP

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Editor . . . . . .Kelly Humphries
Managing Editor . . .Karen Schmidt
Associate Editor . .Elizabeth Soutter

New program helps maintain, upgrade employee computers

(Continued from Page 1)

Form data (approximately 5,000 Systems Management Server users total).

Also, many of the Macintosh computers on site do not have the Systems Management Server beacuse it does not install automatically as on PCs. Selecting the Systems Management Server is a simple process that most "MAC" users can do themselves. Extensive instructions are available on the EWMS Information Home Page. As with the Management Information Form data, it is critical for JSC's future support of desktop computers that the capability for the Systems Management Server be installed (under user control) on all desktop systems.

The Information Systems Directorate and the Information Resource Management Steering Council are using the information gathered by Systems Management Server to help develop the list of CPU's, CRT's and stand-alone printers that need hardware maintenance during FY98. Items not registered by Aug. 15 may not be maintained properly during the next fiscal year.

If employees need instructions on how to complete the Management Information Form data, they can refer to the Enterprise Workstation Management System Information Home page at http://www.jsc.nasa.gov/infosys/ewms/ or call the Help Desk at x34800 or contact their Information Systems Directorate Customer Services Agent.

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